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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/533,797 | 05/04/2005 | Karri Osara | 6009-4742 | 4178 |

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MORGAN & FINNEGAN, L.L.P.
3 WORLD FINANCIAL CENTER
NEW YORK, NY 10281-2101

| EXAMINER | |
|---|---|
| YANG, JIE | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1793 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 11/28/2007 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOPatentCommunications@Morganfinnegan.com
Shopkins@Morganfinnegan.com
jmedina@Morganfinnegan.com

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/533,797 | OSARA ET AL. | |
| | Examiner | Art Unit | |
| | Jie Yang | 1793 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *04 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 May 2005* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/04/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

Claims 1-18 are amended from original claims, and claims 1-18 are pending for examination.

### *Claim Rejections - 35 USC § 102*

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4, 13, 14 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Williams (US 2,621,155, thereafter '155).

Regarding claims 1, 2, 13, 14, and 18, '155 teaches a process for making copper bus bar for electrolytic cell (Col.1, lines 1-4 and Col.2, lines 10-32 of '155), which anticipates the limitation of at least the surface of the bar is made of copper for electrolysis cell busbar application as claimed in the instant claims 1 and 13. '155 teaches the coating copper bus bar with a tin layer then coating it with silver or silver alloy by any conventional manner, for example blow torch soldering or metal spraying (Col.3, lines 4-64 of '155), which anticipate the forming on the copper contact surface of said busbar a transmission layer, coating the contact surface with silver or

silver alloy using soldering or thermal spraying techniques as claimed in the instant claims 1, 2, 13, and 14.

Regarding "forms a metallurgical joint" in claims 1 and 13, because '155 teaches using the same soldering or thermal spraying technique to coating the same tin transmission layer and silver or silver on the same Cu bus bar as disclosed in the instant invention, the metallurgical joint would be inherently obtained. See MPEP2112 III&IV.

Regarding claims 4 and 18, '155 teaches the similar silver or silver alloy coating is also suitable for other copper conductor (including a potential balance bar—noted by examiner) to maintain good electrical contact (Col.4, lines 19-33 of '155).

## *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 7, 8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over '155.

Regarding claims 7, 8 and 10, '155 does not specify the claimed method. However, '155 teaches the silver or silver alloy layers may be applied by any conventional method. Thus,it would have been obvious to one skilled in the art to select any conventional method of '155 including metal thermal spraying technique based on gas combustion as claimed in claim 7; high velocity oxy-fuel spraying as claimed in the instant claim 8; or flame spraying as claimed in the instant claim 10 with expected success.

Claims 3, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over '155 in view of Polvi et al (US 2003/0010410 A1, thereafter 'PG410)

Regarding instant claims 3 and 15, '155 does not explicitly state wherein the silver alloy is silver-copper. 'PG410 teaches a method for making a joint between copper or copper alloy and steel (Abstract of 'PG410). 'PG410 teaches using Ag-Cu alloy as a joint agent (Page 2, paragraphs [0019] to [0022] of 'PG410). 'PG410 teaches using the similar tin intermediate layer and silver alloy to form similar metallurgical joint (Page 1,

paragraph [0014] of 'PG410) for the same copper or copper alloy contactors (Abstract of 'PG410) as claimed in the instant claims. Because the silver alloy of '155 and silver-copper alloy are functional equivalent in terms of being a joint agent, which can maintain good electroconductive capacities (Page 1, paragraph [0004] of 'PG410), therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute silver alloy of '155 by its' equivalent of Ag-Cu alloy as demonstrated in 'PG410 with expected success. See MPEP 2144.06.

Regarding claim 12, '155 does not explicitly state the contact surface is subjected to heat treatment after coating. 'PG410 teaches heat treatment on the copper/tin/silver alloy/steel joint. 'PG410 teaches mechanical strong joint are obtained within certain temperature and thermal treatment period (claim 6, Page 2, paragraphs [0018] to [0022] of 'PG410). Therefore, it would have been obvious to one skilled in the art to have further applied the heat treatment of 'PG410 after coating in '155 process in order to increase the bonding strength.

Claims 5-6, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over '155.

Regarding the instant claims 5, 6, 16, and 17, '155 does not explicitly state coating layer along the whole length of busbar or on notching or grooving of the busbar onto which the electrode is lowed. However, coating location and coating area are result-effective variables in term of "good contact", which is evidenced by '155. '155 teaches bolted contact area between two contactors is easily to seriously impair the electrical connection and the silver alloy layer between connectors effectively maintains a substantially perfect electrical connection at relative high temperature (Col.2, line 38 to Col.3, line 3 of '155). Therefore, it would have been obvious to one skilled in the art to have optimized the coating area and location, for example, coating whole length of the busbar as recited in the instant claims 5 and 16, and coating the notched or grooved areas as claimed in the instant claims 6 and 17 in the process of '155 in order to obtain perfect electrical connection. See MPEP 2144.05 II.

Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over '155 in view of Muffoletto et al (US 5,716,422, thereafter '422)

Regarding claims 9 and 11, '155 teaches the electrical conductivity of the coating alloy must at least equal that of the copper bus bar in order to maintain a good electrical connection (Col.3, lines 32-45 of '155), which reads on the highly electroconductive limitation as claimed in the instant claims. But '155 does not explicitly state spraying material is in powder form (instant claim 9) or in wire form (instant claim 11). '422 teaches thermal spraying, for example, chemical combustion spraying, an electrode active material onto a substrate using both wire and powder processes (Abstract of '422). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select the spraying material in powder or wire form in '155 process, since using conventional forms of spraying material in a thermal spray process of '155 would lead to the expected success as evidenced by '422.

## *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700